



EMOTION AND INTERGROUP

David Matsumoto
SAN FRANCISCO STATE UNIVERSITY

07/02/2015
Final Report

DISTRIBUTION A: Distribution approved for public release.

Air Force Research Laboratory
AF Office Of Scientific Research (AFOSR)/ RTC
Arlington, Virginia 22203
Air Force Materiel Command

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
<p>The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Executive Service Directorate (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p> <p>PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ORGANIZATION.</p>					
1. REPORT DATE (DD-MM-YYYY) 23-06-2015		2. REPORT TYPE Final Report		3. DATES COVERED (From - To) 01-04-2011 to 31-03-2015	
4. TITLE AND SUBTITLE Emotion and Intergroup				5a. CONTRACT NUMBER FA9550-10-1-0544	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) David Matsumoto and Hyisung C. Hwang				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) San Francisco State University Department of Psychology 1600 Holloway Avenue San Francisco, CA 94132				8. PERFORMING ORGANIZATION REPORT NUMBER 4	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Air Force Office of Scientific Research USAF, AFRL, AF Office of Scientific Research 875 N. Randolph St. Room 3112 Arlington, VA 22203				10. SPONSOR/MONITOR'S ACRONYM(S) AFOSR	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Distribution A - Approved for Public Release					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT <p>The overall goal of this project was to examine the role of emotions, and specifically anger, contempt, and disgust, in facilitating the build up to aggression and violence. (Year 1 of this project was fulfilled under a separate contract number.) This project tested a theory of the role of specific emotions in the motivation of groups that transform angry or fearful groups into organizations of violence and hostility. We focused on the role of anger, contempt, and disgust (the ANCODI hypothesis) in this transformation. Years 1 (separate contract number) and 2 (Year 1 of the current contract) of this project involved the analysis of historical archival records to test the ANCODI hypothesis of aggression. The ANCODI emotions were associated with political aggression in groups, and the findings transcended language, group type, and time period. Years 3-5 (Years 1-3 this contract) involved a series of laboratory studies that demonstrated that ANCODI emotions caused members of political groups to harbor hostile cognitions and emotions, and to engage in aggressive behaviors and decision making. Collectively the studies supported the ANCODI hypothesis of political aggression, have made strong contributions to the scientific literature, and have substantial implications to defense and national security.</p>					
15. SUBJECT TERMS intergroup emotions, hostility, anger, contempt, disgust					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON David Matsumoto
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. TELEPHONE NUMBER (Include area code) 1-415-338-1114

INSTRUCTIONS FOR COMPLETING SF 298

1. REPORT DATE. Full publication date, including day, month, if available. Must cite at least the year and be Year 2000 compliant, e.g. 30-06-1998; xx-06-1998; xx-xx-1998.

2. REPORT TYPE. State the type of report, such as final, technical, interim, memorandum, master's thesis, progress, quarterly, research, special, group study, etc.

3. DATES COVERED. Indicate the time during which the work was performed and the report was written, e.g., Jun 1997 - Jun 1998; 1-10 Jun 1996; May - Nov 1998; Nov 1998.

4. TITLE. Enter title and subtitle with volume number and part number, if applicable. On classified documents, enter the title classification in parentheses.

5a. CONTRACT NUMBER. Enter all contract numbers as they appear in the report, e.g. F33615-86-C-5169.

5b. GRANT NUMBER. Enter all grant numbers as they appear in the report, e.g. AFOSR-82-1234.

5c. PROGRAM ELEMENT NUMBER. Enter all program element numbers as they appear in the report, e.g. 61101A.

5d. PROJECT NUMBER. Enter all project numbers as they appear in the report, e.g. 1F665702D1257; ILIR.

5e. TASK NUMBER. Enter all task numbers as they appear in the report, e.g. 05; RF0330201; T4112.

5f. WORK UNIT NUMBER. Enter all work unit numbers as they appear in the report, e.g. 001; AFAPL30480105.

6. AUTHOR(S). Enter name(s) of person(s) responsible for writing the report, performing the research, or credited with the content of the report. The form of entry is the last name, first name, middle initial, and additional qualifiers separated by commas, e.g. Smith, Richard, J, Jr.

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES). Self-explanatory.

8. PERFORMING ORGANIZATION REPORT NUMBER. Enter all unique alphanumeric report numbers assigned by the performing organization, e.g. BRL-1234; AFWL-TR-85-4017-Vol-21-PT-2.

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES). Enter the name and address of the organization(s) financially responsible for and monitoring the work.

10. SPONSOR/MONITOR'S ACRONYM(S). Enter, if available, e.g. BRL, ARDEC, NADC.

11. SPONSOR/MONITOR'S REPORT NUMBER(S). Enter report number as assigned by the sponsoring/monitoring agency, if available, e.g. BRL-TR-829; -215.

12. DISTRIBUTION/AVAILABILITY STATEMENT. Use agency-mandated availability statements to indicate the public availability or distribution limitations of the report. If additional limitations/ restrictions or special markings are indicated, follow agency authorization procedures, e.g. RD/FRD, PROPIN, ITAR, etc. Include copyright information.

13. SUPPLEMENTARY NOTES. Enter information not included elsewhere such as: prepared in cooperation with; translation of; report supersedes; old edition number, etc.

14. ABSTRACT. A brief (approximately 200 words) factual summary of the most significant information.

15. SUBJECT TERMS. Key words or phrases identifying major concepts in the report.

16. SECURITY CLASSIFICATION. Enter security classification in accordance with security classification regulations, e.g. U, C, S, etc. If this form contains classified information, stamp classification level on the top and bottom of this page.

17. LIMITATION OF ABSTRACT. This block must be completed to assign a distribution limitation to the abstract. Enter UU (Unclassified Unlimited) or SAR (Same as Report). An entry in this block is necessary if the abstract is to be limited.

15 June 2015

Dr. Benjamin Knott

Benjamin A Knott, PhD

Air Force Office of Scientific Research

Program Officer - Trust and Influence

875 N. Randolph St.

Arlington, VA 22203

Phone: 703-696-1142

Email: benjamin.knott.2@us.af.mil

Reference: AFOSR FA9550-10-1-0544

Dear Dr. Knott;

In accordance with AFOSR Award No. FA9550-10-1-0544 from AFOSR to San Francisco State University (SFSU), and the Contract Data Requirements List (CDRL) of the referenced contract, SFSU is pleased to submit the Final Report for the project. If you have any questions concerning the contents of this report, please contact me at (510) 704-1883.

Respectfully,

A handwritten signature in black ink, reading "David Matsumoto". The signature is fluid and cursive, with a stylized "D" and "M".

David Matsumoto, Ph.D.

Professor of Psychology

Principal Investigator

Table of Contents

Project Overview	3
Summary of Specific Findings across the Entire Grant Period	4
Year 1	4
Year 2	4
Year 3	5
Year 4	5
Potential Impact or Translation to Military Applications	7
Performance Metrics	8
Bibliography	9
Invited Talks	9
Book Chapters and Sections	9
Articles in Refereed Journals	9
Other Publications	10
Presentations at Scientific Conferences	10

Project Overview

The emotions that people have about themselves, their ingroups, and their outgroups is a crucial component of any group. Group emotions are incredibly important in the creation and maintenance of group identity, solidarity, and overall functioning. Although group emotions have become an important area of study in the past decade, the field still lacks basic information concerning the role of specific emotions in groups. The overarching goal of this five-year project was to examine the role of emotions, and specifically anger, contempt, and disgust, in facilitating the build up to aggression and violence. (Year 1 of this project was fulfilled under a separate contract number.) This project filled this void in our knowledge by testing a theory of the role of specific emotions in the motivation of groups that transform angry or fearful groups into organizations of violence and hostility. We focused on the role of anger, contempt, and disgust (the ANCODI hypothesis) in this transformation, and in the escalation toward violence.

Years 1 (separate contract number) and 2 (Year 1 of the current contract) of this project involved the analysis of historical archival records to test the ANCODI hypothesis of aggression. These studies demonstrated the ANCODI emotions were associated with political aggression in groups; moreover the findings transcended language, group type, and time period. Years 3-5 (Years 1-3 this contract) involved a series of laboratory studies that demonstrated that ANCODI emotions *caused* members of political groups to harbor hostile cognitions and emotions, and to engage in aggressive behaviors and decision making. Collectively the studies supported the ANCODI hypothesis of political aggression, have made strong contributions to the scientific literature, and have substantial implications for defense and national security.

Summary of Specific Findings across the Entire Grant Period

Year 1

In the first year of this project we tested the ideas outlined in the Project Overview above in a study examining the role of emotion in leading to and justifying hostile acts in ideologically-based groups. We obtained historical archives of world leaders and leaders of ideologically-based groups justifying acts of war and hostility against other nation states or groups. We isolated parts of their speeches in which they spoke about the outgroups they despised, at three different times before an identified act of aggression. We coded the emotional content of these identified statements using two different teams of emotion annotators using two independently derived annotation systems. As a comparison, the speeches of leaders of ideologically-motivated groups that did *not* escalate to violence were also analyzed. Analyses of both sets of codings indicated supported for the hypothesis that anger, contempt, and disgust escalated in the months immediately prior to aggression in the groups that committed such an act; but those same emotions did not change for the groups that did not commit an act of aggression.

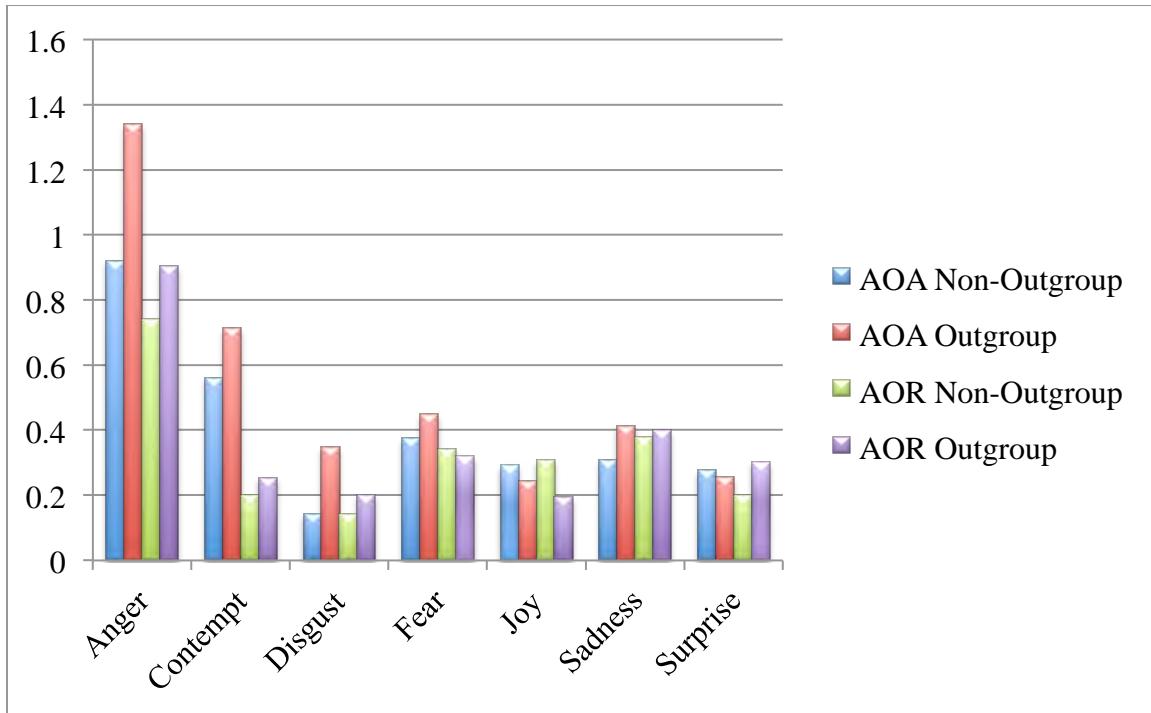
Year 2

In the second year of the project we tested the same ideas by analyzing the nonverbal expressions of emotion in videotaped speeches of leaders of ideologically motivated groups as the groups moved toward either committing an act of violence or not. We obtained source records of videos of such leaders that met our experimental criteria, transcribed the speeches, and annotated the parts of the speeches that directly referenced outgroups (and those that did not). A separate set of coders then coded the emotions they perceived as being expressed in the videos of the speeches. The emotions coded were anger, contempt, disgust, fear, joy, sadness, and surprise.

Speeches associated with acts of aggression (AoA) had significantly greater expressions of anger, contempt, and disgust than did speeches associated with non-violent acts of resistance (AoRs). More importantly, there were greater expressions of anger, contempt, and disgust when the outgroups were mentioned, compared to the non-outgroup topics, but only for AoAs and not AoRs (see Figure 1). These group differences were not associated with the actual words used in the speeches, thereby implicating the nonverbal expression of emotions.

Figure 1

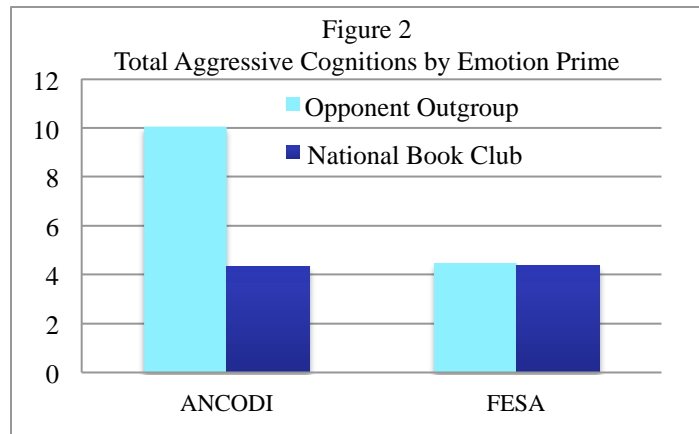
Sample Findings from Year 2



Year 3

In years 3 and 4, we conducted three laboratory studies in which we examined whether the elicitation of anger, contempt and disgust in members of political groups causally increased thoughts, feelings, or behaviors related to hostile or aggressive acts. In all three laboratory studies, we recruited members of political groups that had a group opposed to its cause. We elicited a combination of either anger-contempt-disgust (ANCODI) or fear-sadness (as a comparison), and examined the resulting changes in hostile cognitions (Study 3), hostile language (Study 4), and hostile behavior (Study 5) in relation to the opponent outgroup or a neutral outgroup.

The results from all three studies demonstrated that ANCODI produced more hostile cognitions, language, and behavior against the opponent outgroups than did other negative emotions (see Figure 2). These results extended the studies from years 1 and 2 by showing a causative link to the building blocks of hostile thoughts, feelings, or actions. See Figure 2 for an example of one of the findings.

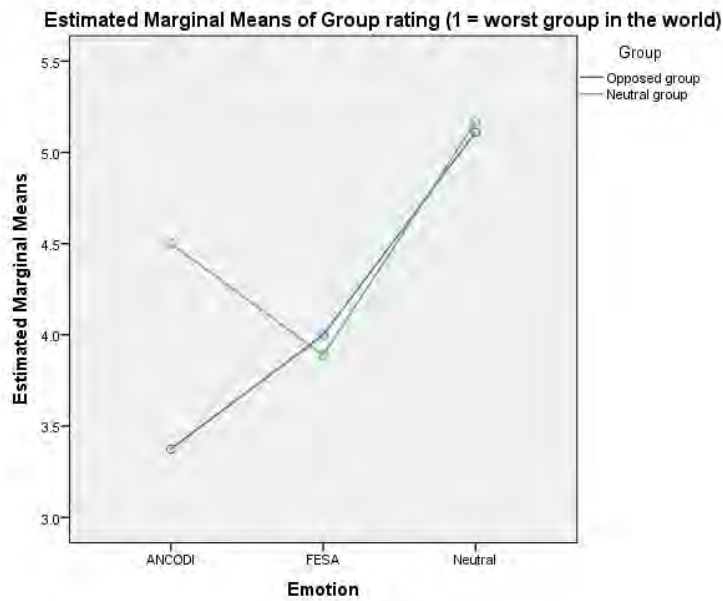


Year 4

In Year 4, we conducted an additional laboratory study (Study 6) in which we examined whether the elicitation of anger, contempt and disgust in members of political

groups causally increased thoughts, feelings, or behaviors related to hostile or aggressive acts. The purpose of this study was to address one of the limitations of the previous studies, that the emotion prime manipulations were essentially coincidental to the outgroup manipulations. In this study we primed the emotions to be directly related to an action of the outgroup. As before, we recruited members of political groups that had a group opposed to its cause.

We elicited a combination of either anger-contempt-disgust (ANCODI) or a comparison mix of emotions, and examined the resulting changes in attitudes toward the opponent outgroup or a neutral outgroup.



The results demonstrated that ANCODI produced more hostile cognitions, language, behavior, and attitudes against the opponent outgroups than did other negative emotions (see Figure 3). These results complemented and extended the studies from the previous years by showing a causative link to the building blocks of hostile thoughts, feelings, or actions using an emotion prime that was not coincidental to the outgroup manipulations (see Figure 3 for an example of one of the findings).

Potential Impact or Translation to Military Applications

Monitoring the expression of emotions by group leaders may provide not only early warning mechanisms of impending possible aggression, but also a method to gauge the effects of one's own group's actions on other groups. Developing systems to assess emotions among members of groups, and at different levels within the groups, may provide a way to gain insights about the degree to which emotion sharing may occur within groups, which may be important for political justification of leader decisions and thus predict possible behavioral group reactions. Such systems may be akin to rumor-monitoring systems that are useful in assessing counter-insurgency operations in many areas of the world, where the battle concerning knowledge and information is as important as kinetic operations.

Performance Metrics

- Two invited talks
- Four book chapters/sections
- Seven articles published in scientific, peer-reviewed publications (includes two currently under revision and resubmission)
- One article published in transitional publications for specific user communities (FBI Law Enforcement Bulletin)
- Seven conference presentations

Bibliography

Invited Talks

Matsumoto, D. (2013, May). "Behavioral Signatures across Cultures." Invited talk to the Institute for Defense and Government Advancement (IDGA) conference on Human Geography 2013: Advancing Human Intelligence Integration for GEOINT and the IC. Washington, DC.

Matsumoto, D. (2010, September). "Emotional Expressions Predict Aggression in Ideologically-Motivated Groups." The Minerva Initiative: Fostering a Community of Strategic Scholarship A Forces Transformation and Resources Seminar. Fort Lesley J. McNair, Washington, D.C.

Book Chapters and Sections

Frank, M. G., Matsumoto, D., & Hwang, H. C. (in press). Intergroup emotions and political violence: The ANCODI hypothesis. In Forgas, J. (ed.), *The 17th Sydney Symposium of Social Psychology*, Volume 17, 17-20 March 2014.

Matsumoto, D. (in press). The role of emotion in escalating violent non-state actors to hostility. In A. Speckhard, L. Kuznar, T. Rieger, and L. Fernstermacher (eds.), *Protecting the homeland from international and domestic terrorism threats: Current multi-disciplinary perspectives on root causes, the role of ideology, and programs for counter-radicalization and disengagement*. Washington, DC: Joint Staff J3, Strategic Command Global Innovation and Strategy Center, and the Office of the Secretary of Defense Department of Development Research and Engineering.

Matsumoto, D., Hwang, H. S., and Frank, M. G. (2010). The role of emotion in predicting violence. White paper prepared for the *Neurobiology of Political Violence: New tools, new insights*. National Institutes of Health sponsored workshop, December 2010 (Bethesda, MD).

Matsumoto, D., & Frank, M. G. (2010). The role of emotion in predicting violence. In Bringuel, A. J., Janowicz, J. C., Valida, A. C. and Reid, E. F. (eds.). *Terrorism research and analysis project (TRAP): A collection of thoughts, ideas, and perspectives* (pp. 231 – 258). Washington, DC: Government Printing Office.

Articles in Refereed Journals

Matsumoto, D., Hwang, H. C., & Frank, M. G. (2013). *Emotion and aggressive intergroup cognitions: The ANCODI hypothesis*. Manuscript currently submitted for publication. (Revision requested by *Group Processes and Intergroup Relations*.)

Matsumoto, D., Hwang, H. C., & Frank, M. G. (2013). *The effects of anger, contempt, and disgust on hostile language: The ANCODI hypothesis*. Manuscript currently submitted for publication. (Revision requested by *Journal of Applied Social Psychology*.)

Matsumoto, D., Frank, M. G., & Hwang, H. C. (in press). The role of intergroup emotions on political violence. *Current Directions in Psychological Science*.

- Matsumoto, D., Hwang, H. C., and Frank, M. G. (2014). Emotions expressed by leaders in videos predict political aggression. *Behavioral Sciences of Terrorism and Political Aggression*, 6(3), 212-218. First published online 12 February 2013. DOI:10.1080/19434472.2013.769116.
- Matsumoto, D., Hwang, H. S., and Frank, M. G. (2014). Emotions expressed in speeches by leaders of ideologically motivated groups predict aggression. *Behavioral Sciences of Terrorism and Political Aggression*, 6(1), 1-18. Published online 28 August 2012, DOI: 10.1080/19434472.2012.716449.
- Matsumoto, D., Hwang, H. C., and Frank, M. G. (2013). Emotional language and political aggression. *Journal of Language and Social Psychology*, 32(4), 442-458. First published on 7 February 2013. DOI: 10.1177/0261927X12474654.
- Matsumoto, D., & Hwang, H. C. (2013). The language of political aggression. *Journal of Language and Social Psychology*, 32(3), 335-348. Published online 8 October 2012, DOI: 10.1177/0261927X12460666.

Other Publications

- Matsumoto, D., Hwang, H. S., & Frank, M. G. (2012). The role of emotions in predicting violence. *Federal Bureau of Investigation Law Enforcement Bulletin*, January, 1-11. Quantico, VA: Federal Bureau of Investigation.

Presentations at Scientific Conferences

- Frank, M. G., Matsumoto, D., & Hwang, H. C. (2014, September). *Emotions and intergroup relations: Evidence for the ANCODI hypothesis from real world acts of aggression and resistance*. Paper presented in poster at the 2013 MINERVA Meeting and Program Review, Washington, DC.
- Frank, M. G., Matsumoto, D., & Hwang, H. C. (2014, March). *Intergroup emotions and political aggression: The ANCODI hypothesis*. Paper presented at the 17th Sydney Symposium of Social Psychology. Sydney, Australia.
- Frank, M. G., Matsumoto, D., & Hwang, H. C. (2013, September). *Emotions and intergroup relations: Preliminary results show ANCODI emotions predict hostile reactions to nemesis groups*. Paper presented in poster at the 2013 MINERVA Meeting and Program Review, Washington, DC.
- Matsumoto, D., Frank, M. G., & Hwang, H. C. (2012, September). *Emotional language and political aggression*. Paper presented in poster at the 2012 MINERVA Meeting and Program Review, Arlington, VA.
- Matsumoto, D., Hwang, H. S., and Frank, M. G. (2012, June). *Emotions expressed in speeches by leaders of ideologically motivated groups predict aggression*. Paper presented at the John Jay College 10th Biennial International Conference: Global Perspectives on Justice, Security, and Human Rights. New York, New York.
- Matsumoto, D., Frank, M. G., & Hwang, H. S. (2011, September). *Emotions and intergroup relations: Emotion-based content analysis of justifications of war from the written record in modern and postmodern history*. Paper presented in poster at the 2nd Annual MINERVA Conference: Developing Foundational Knowledge for Present and Future Conflict. Washington, DC.
- Matsumoto, D., Frank, M., and Hwang, H. S. (2011, June). *Emotions and Intergroup*

Relations. Progress Report presented at the Air Force Office of Scientific Research Collective Behavior and Socio-Cultural Modeling Program Review, Washington, DC.

1.

1. Report Type

Final Report

Primary Contact E-mail

Contact email if there is a problem with the report.

dm@sfsu.edu

Primary Contact Phone Number

Contact phone number if there is a problem with the report

510-912-8741

Organization / Institution name

San Francisco State University

Grant/Contract Title

The full title of the funded effort.

Emotions and Intergroup Relations

Grant/Contract Number

AFOSR assigned control number. It must begin with "FA9550" or "F49620" or "FA2386".

FA9550-10-1-0544

Principal Investigator Name

The full name of the principal investigator on the grant or contract.

David Matsumoto

Program Manager

The AFOSR Program Manager currently assigned to the award

Benjamin Knott

Reporting Period Start Date

04/01/2011

Reporting Period End Date

03/31/2015

Abstract

The overall goal of this project was to examine the role of emotions, and specifically anger, contempt, and disgust, in facilitating the build up to aggression and violence. (Year 1 of this project was fulfilled under a separate contract number.) This project tested a theory of the role of specific emotions in the motivation of groups that transform angry or fearful groups into organizations of violence and hostility. We focused on the role of anger, contempt, and disgust (the ANCODI hypothesis) in this transformation. Years 1 (separate contract number) and 2 (Year 1 of the current contract) of this project involved the analysis of historical archival records to test the ANCODI hypothesis of aggression. The ANCODI emotions were associated with political aggression in groups, and the findings transcended language, group type, and time period. Years 3-5 (Years 1-3 this contract) involved a series of laboratory studies that demonstrated that ANCODI emotions caused members of political groups to harbor hostile cognitions and emotions, and to engage in aggressive behaviors and decision making. Collectively the studies supportd the ANCODI hypothesis of political aggression, have made strong contributions to the scientific literature, and have substantial implications to defense and national security.

Distribution Statement

This is block 12 on the SF298 form.

DISTRIBUTION A: Distribution approved for public release.

Distribution A - Approved for Public Release

Explanation for Distribution Statement

If this is not approved for public release, please provide a short explanation. E.g., contains proprietary information.

SF298 Form

Please attach your [SF298](#) form. A blank SF298 can be found [here](#). Please do not password protect or secure the PDF
The maximum file size for an SF298 is 50MB.

[AFD-070820-035.pdf](#)

Upload the Report Document. File must be a PDF. Please do not password protect or secure the PDF . The maximum file size for the Report Document is 50MB.

[150615 MINERVA Final Report.pdf](#)

Upload a Report Document, if any. The maximum file size for the Report Document is 50MB.

Archival Publications (published) during reporting period:

See listing in Final Report

Changes in research objectives (if any):

None

Change in AFOSR Program Manager, if any:

Project originally started with Terry Lyons
the next PM was Joseph Lyons

Extensions granted or milestones slipped, if any:

None

AFOSR LRIR Number

LRIR Title

Reporting Period

Laboratory Task Manager

Program Officer

Research Objectives

Technical Summary

Funding Summary by Cost Category (by FY, \$K)

	Starting FY	FY+1	FY+2
Salary			
Equipment/Facilities			
Supplies			
Total			

Report Document

Report Document - Text Analysis

Report Document - Text Analysis

Appendix Documents

2. Thank You

E-mail user

Jun 15, 2015 16:13:13 Success: Email Sent to: dm@sfsu.edu